

**Axial Lead Diode**

Schottky barrier rectifier diodes

**Forward Current: 15 A**

**Reverse Voltage: 20 to 45 V**

**SB1520 ... SB1545**

## Features

- Max. solder temperature: 260 °C
- Plastic material has UL classification 94V-0
- Electrostatic discharge immunity test IEC 1000-4-2 (C=150 pF, R=150 Ohm) : voltage class 20 kV

## Typical Applications\*

- Designed as Bypass Diodes for Solar Panels

## Mechanical Data

- Plastic case: 8 x 7.5 [mm]
- Weight approx.: 1.5 g
- Terminals: plated terminals solderable per MIL-STD-750
- Mounting position: any
- Standard packaging: 500 pieces per ammo or 1000 pieces per reel

## Footnotes

<sup>1)</sup>  $I_F = -A$ ,  $I_R = -A$ ,  $I_{RR} = -A$

<sup>2)</sup>  $I_F = 5 A$ ,  $T_j = 25 ^\circ C$

<sup>3)</sup>  $I_F = 15 A$ ,  $T_j = 25 ^\circ C$

<sup>4)</sup> Valid, if leads are kept at  $T_A$  at a distance of 10 mm from case

<sup>5)</sup> Max. junction temperature  $T_j \leq 200 ^\circ C$  in bypass mode / DC forward mode

<sup>6)</sup> Thermal resistance from junction to lead/terminal at distance 0 mm from case

| Type   | Repetitive peak reverse voltage<br>$V_{RRM}$<br>V | Surge peak reverse voltage<br>$V_{RSM}$<br>V | Max. reverse recovery time<br>$t_{rr}^{1)}$<br>ns | Max. forward voltage<br>$V_F^{2)}$<br>V | Max. forward voltage<br>$V_F^{3)}$<br>V |
|--------|---------------------------------------------------|----------------------------------------------|---------------------------------------------------|-----------------------------------------|-----------------------------------------|
| SB1520 | 20                                                | 20                                           | -                                                 | 0,43                                    | 0,52                                    |
| SB1530 | 30                                                | 30                                           | -                                                 | 0,43                                    | 0,52                                    |
| SB1540 | 40                                                | 40                                           | -                                                 | 0,43                                    | 0,52                                    |
| SB1545 | 45                                                | 45                                           | -                                                 | 0,43                                    | 0,52                                    |

## Absolute Maximum Ratings

| Symbol                                                            | Conditions                                | Values                                        | Unit                                 |
|-------------------------------------------------------------------|-------------------------------------------|-----------------------------------------------|--------------------------------------|
| <b><math>T_a = 25 ^\circ C</math>, unless otherwise specified</b> |                                           |                                               |                                      |
| $I_{FAV}$                                                         | R-load, <sup>4)</sup> $T_a = 50 ^\circ C$ | 15                                            | A                                    |
| $I_{FRM}$                                                         | $f > 15 Hz$ , <sup>4)</sup>               | 60                                            | A                                    |
| $I_{FSM}$                                                         | half sinus-wave<br>$T_a = 25 ^\circ C$    | $t_p = 10 ms$<br>320<br>$t_p = 8.3 ms$<br>386 | A<br>A                               |
| $i^2t$                                                            | $T_a = 25 ^\circ C$                       | $t_p = 10 ms$<br>512<br>$t_p = 8.3 ms$<br>745 | A <sup>2</sup> s<br>A <sup>2</sup> s |
| $T_j$                                                             |                                           | -50 ... +150                                  | °C                                   |
| $T_j$                                                             | DC forward (bypass) mode <sup>5)</sup>    | -50 ... +200                                  | °C                                   |
| $T_{stg}$                                                         |                                           | -50 ... +175                                  | °C                                   |

## Characteristics

| Symbol                                                            | Conditions                                                   | min. | typ. | max. | Unit |
|-------------------------------------------------------------------|--------------------------------------------------------------|------|------|------|------|
| <b><math>T_a = 25 ^\circ C</math>, unless otherwise specified</b> |                                                              |      |      |      |      |
| $I_R$                                                             | $T_j = 25 ^\circ C$ , $V_R = V_{RRM}$                        |      |      | 500  | µA   |
| $I_R$                                                             | $T_j = 100 ^\circ C$ , $V_R = V_{RRM}$                       |      |      | 25   | mA   |
| $C_j$                                                             | at 1 MHz and applied reverse voltage of 4 V                  |      | -    |      | pF   |
| $E_{RSM}$                                                         | L = 60 mH, $T_j = 25 ^\circ C$ , inductive load switched off |      | -    |      | mJ   |
| $R_{th(j-a)}$                                                     | <sup>4)</sup>                                                |      |      | -    | K/W  |
| $R_{th(j-L)}$                                                     | <sup>6)</sup>                                                |      |      | 3    | K/W  |



**Diode**

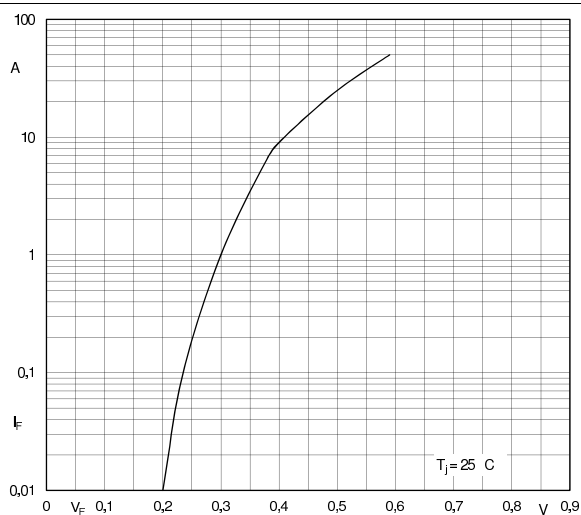


Fig.1: Forward characteristics (typical value)

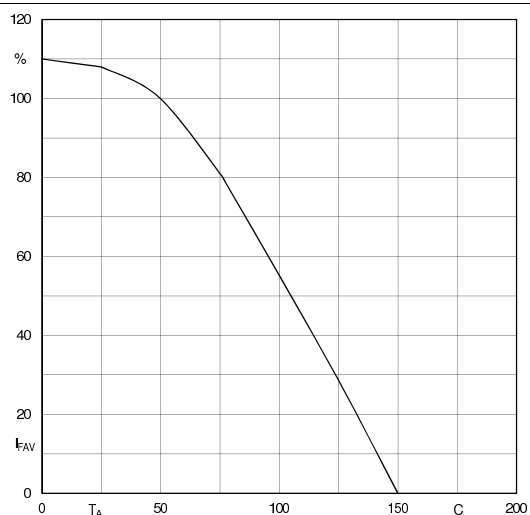


Fig.2: Rated forward current vs. ambient temperature <sup>4)</sup>

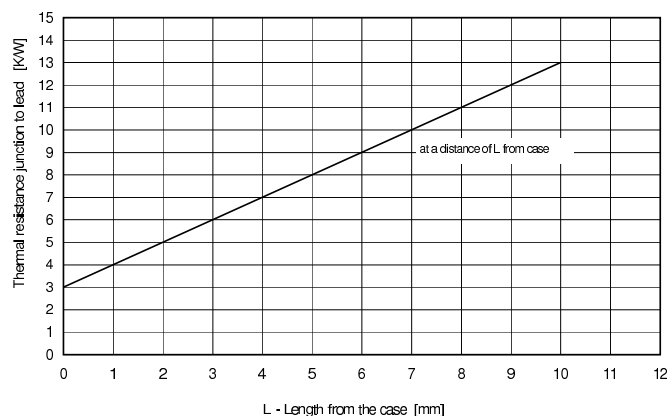
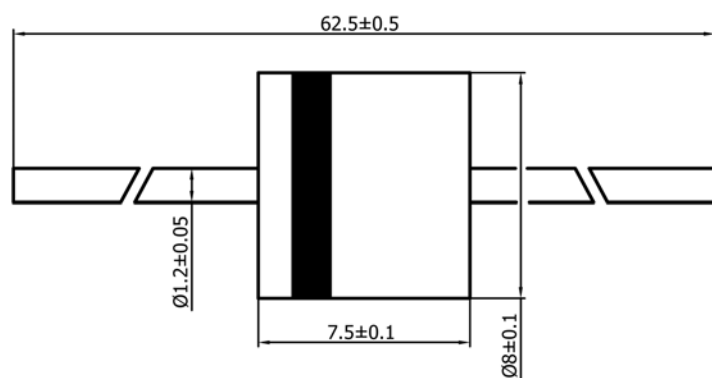


Fig.3: Thermal resistance versus distance from case



Case: 8 x 7,5 [mm]

This is an electrostatic discharge sensitive device (ESDS), international standard IEC 60747-1, Chapter IX

\* The specifications of our components may not be considered as an assurance of component characteristics. Components have to be tested for the respective application. Adjustments may be necessary. The use of SEMIKRON products in life support appliances and systems is subject to prior specification and written approval by SEMIKRON. We therefore strongly recommend prior consultation of our staff.